



PROCESS FOR TUNGSTEN SILICIDE ATOMIC LAYER DEPOSITION

ABSTRACT

5

A method for growing a thin tungsten silicide film on a hydrated substrate in a reaction space introduces a tungsten halide precursor, where the halide is not fluorine, into the reaction space to the hydrated substrate to create, for example, a chlorine terminated substrate surface and deposit tungsten without scavenging 10 silicon. A silicon hydride precursor is then introduced into the reaction space to the chloride terminated substrate surface to create a hydride terminated substrate surface and deposit silicon. The two preceding steps are repeated an integral number of times to form a tungsten silicide film on the substrate, wherein a reaction by-product is a hydrogen halide.

15